

ART. XVI.—*New or Little-known Victorian Fossils in the National Museum.*

PART XV.—SOME TERTIARY GASTEROPODA.

By FREDERICK CHAPMAN, A.L.S., ETC.

(National Museum, Melbourne).

(With Plates XII and XIII).

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Introductory Remarks.

Seven species of gasteropoda are herein discussed, four of which are new, viz., *Astralium (Imperator)*, *undosum*, *Homalaxis praeemidionalis*, *Cypraea gabrieli* and *Pleurotoma sayceana*. The species of *Astralium* is distinctly Australian in character, showing affinities both with the New Zealand living *A. heliotropium* and the Table Cape fossil *A. hudsonianum*, and is older than the last-named fossil species. One of the chief points of interest in regard to the occurrence of *Homalaxis* is that the genus should be discovered in strata in the Southern Hemisphere, nearly as old (i.e., oligocene) as that of its first known fossil horizon (middle eocene) of Europe. It is an extremely rare and beautiful form, and the present species shows close affinity with that lately dredged up from the coast of New South Wales. To the group of giant cowries, centreing around *Cypraea gigas*, belongs the species now described as *C. gabrieli*. The contused surface is highly interesting, and suggests affinities with *C. contusa*, which ranges from balcombian to janjukian (oligoene to miocene). *Pleurotoma sayceana* is allied in some respects to several members of the genus now found living, generally in warmer seas adjacent to Australia.

Of the three previously described species, one, *Acmaea octoradiata* is described as a fossil for the first time, whilst the two remaining species, *Turbo etheridgei* and *T. atkinsoni* are recorded from localities other than Table Cape, to which they seemed restricted, but from the same janjukian horizon.

FAM. PATELLIDAE.

Genus *Acmaea*, Eschscholtz.

*Acmaea octoradiata*, Hutton sp. (Plate XII., Figs. 1, 2.)

*Patella octoradiata*, Hutton, 1873, Cat. Mar., Moll., N. Zealand, p. 44, No. 201. *Acmaea saccharina*, var. *perplera*, Pilsbry, 1891,

Man., Conch., vol. XIII., p. 50, pl. XXXVI., figs. 69-71. *Patella perplera*, Pilsbry, Pritchard and Gatliff, 1903, Proc. Roy. Soc., Vict., vol. XV. (N.S.), pt. I., p. 194. *Acmæa octoradiata*, Hutton sp., Hedley, 1904, Proc. Linn. Soc., N.S. Wales, vol. XXIX., pt. I., No. 113, p. 188. Pritchard and Gatliff, 1905, Proc. Roy. Soc., Vict., vol. XVIII. (N.S.), p. 65. Verco, 1906, Trans. Roy. Soc., S. Austr., vol. XXX., p. 209.

*Observations.*—The present record is the first occurrence of this species in the fossil state. It is of great interest to find it so low down as the Janjukian, to which stage I refer the fossiliferous ironstone of the Flemington Railway cutting. Although the fossils are in the form of casts, the moulds retain very faithful impressions of the external surface of the shell, which can be examined positively by means of a wax squeeze. The internal cast in ironstone also exhibits concentric markings and internal marginal band, characteristic of *Acmæa*.

In Hall and Pritchard's list of Flemington fossils "*Acmæa* sp. aff. *A. costata*" [Sow.], is cited, but that form has a larger number of radial ribs than the present one.<sup>1</sup>

*Acmæa octoradiata* as a living species has the following distribution:—West Coast of the South Island, New Zealand; Port Phillip, Victoria; Port Jackson (Maroubra Bay), New South Wales.

*Occurrence.*—Tertiary; Janjukian series. Ironstone beds at the Flemington Railway cutting, Melbourne. Specimens collected and presented by Mr. J. Sidney Green.

#### FAM. TURBINIDÆ.

#### Genus *Astralium*, Link.

#### Sub-genus *Imperator*, Montfort.

*Astralium (Imperator) undosum*, sp. nov. (Plate XII., Fig. 3.)

*Description.*—Shell moderately large, trochoid, somewhat depressed, with an apical angle of 120°; earliest stage of shell nearly smooth, followed by three moderately inflated whorls. Periphery, when perfect, bearing 10 flattened, spinose processes. Surface of shell-whorls ornamented with fine, transverse, undulating wrinkles, which tend to become tubercles at the junction with the sutural lines. Surface of spines relieved by fine, curved striae pointing anteriorly. Inner area of whorl gently inflated, flat at the sutures, and depressed to form a keel around the external margin. The tracery on the spines of the inner whorls barely covered up by the successive turns of the shell, and seen on the external border of the inner whorls. Base of shell concealed by matrix.

<sup>1</sup> Proc. Roy. Soc. Vict., vol. ix. (n.s.), 1897, p. 209.

*Dimensions.* Height from base of the spines, 9 mm.; greatest breadth, to extremities of spines, 34.5 mm.; breadth of last whorl, 10.25 mm.

*Observations.*—This handsome shell is closely allied both to *Astraliium (Imperator) heliotropium*, Martyn (= *imperiale*, Chemnitz)<sup>1</sup> found living round New Zealand; and the janjukian species from Table Cape, Tasmania, *A. (I.) hudsonianum*, Johnston sp.<sup>2</sup> From the living species the present form differs in having fewer spines, and in the absence of the centrifugally striate surface, excepting to a partial extent on the spines alone. The other, fossil form, from Table Cape, is a heavier and stouter shell with a large number of spines and strongly centrifugal ornament as in *A. (Imp.) heliotropium*.

*Occurrence.*—Tertiary; balcombian series. In the blue clays of the Altona Bay Coal-shaft. Coll. by Mr. J. S. Green.

#### Genus **Turbo**, Linnaeus.

##### *Turbo etheridgei*, Tenison Woods.

*Turbo etheridgei*, Tenison Woods, 1877, Proc. Roy. Soc., Tasmania, for 1876, p. 98.

*Observations.*—This hitherto restricted Table Cape fossil has now occurred in the Flemington tertiary ironstone beds. This record forms an additional and valuable piece of evidence as to the age of these beds, which have hitherto been regarded by some authorities as balcombian, but which, from the prevalence of restricted species of the janjukian fauna, the writer would relegate to the latter horizon.

*Occurrence.*—Tertiary; janjukian series. Ironstone beds at Flemington Railway cutting, Melbourne. A mould of the shell. Presented by Mr. H. Ford, Station Master, Flemington Bridge Railway Station.

##### *Turbo atkinsoni*, Pritchard.

*Turbo atkinsoni*. Pritchard, 1896, Proc. Roy. Soc., Vict., vol. VIII. (N.S.), p. 118, pl. III., fig. 12.

*Observations.*—Both the above and the present species are found at Table Cape. A comparatively long series in the Dennant collection shows all gradations, from a shell with stepped whorls to that with straight sides. The chief distinctions of *T. atkinsoni* are the even contour and the broad, sub-carinate base. In the National Museum collection there is a specimen of this subspecific form in

<sup>1</sup> Martyn, Con. Icon., 1784, fig. 30. Tryon, Man. Conch., vol. x., 1888, p. 228, pl. lvi., fig. 87.

<sup>2</sup> Geol. of Tasmania, 1888, pl. xxix., figs. 12, 12a (figures only). Described by G. B. Pritchard, Proc. Roy. Soc. Vict., vol. viii. (n.s.), 1896, p. 116, under the name of *Astraliium (Imperator) johnstoni*.

its typical aspect, as described by Dr. Pritchard, from Torquay, Victoria. That locality, although in the same geological stage as the Table Cape beds, is a new one for the above form, since it has hitherto been restricted to the latter place.

*Occurrence.*—Tertiary; Janjukian. Bird Rock Cliffs, Torquay. Coll. by the late Mr. J. F. Bailey.

Fam. SOLARIIDAE.

Genus *Homalaxis*, Deshayes.

*Homalaxis praeaustralis*, sp. nov. (Plate XII., Figs. 4-6.)

*Description.*—Shell small, compressed, subcircular; flat above, rather deeply concave below, side hollow. Protoconch smooth, inflated, consisting of about one turn; remainder of shell consisting of three whorls. Shell, as seen from above, nearly flat, only very slightly concave in the last whorl; bordered externally with a beaded or nodulose margin, whilst from each nodule there proceeds a thin raised thread normal to the margin. Median surface of whorl relieved by a strong but narrow, nodulose raised band, which appears submarginal by the involution of the earlier whorls; general surface finely spirally striate and crossed at right angles by the excessively fine growth-lines, producing a micro-cancellate ornament. Peripheral area stepped below the inner half of the whorl. As seen from below, whorls angulately convex, with a median, raised nodulose band, and several fine, spiral striae parallel to the margin; these are crossed by fine lines of growth; the median band on the inner whorls submarginal in relation to the successive turns of the shell. Mouth subcircular, slightly elongated in the direction of the long axis of shell; the peripheral border and the outer median band standing out in the oral aspect as two strong, salient beaded carinae.

*Dimensions.*—Major axis, 6.25 mm.; minor axis, 5.5 mm.; height, 1.75 mm.

*Observations.*—This handsome species represents the first recorded occurrence of the genus as an Australian tertiary fossil. Mr. Chas. Hedley has described and figured a recent species under the name of *Omalaxis meridionalis*,<sup>1</sup> from Port Stephens and off Cape Three Points, New South Wales, 49-50 fathoms ("Thetis"). Several species of this genus were described and figured by Deshayes (under the generic name of *Bifrontia*) from the middle eocene of the Paris Basin,<sup>2</sup> but none has the same type of ornament as the Australian shells, either recent or fossil.

1 Mem. Austr. Mus., vol. iv., pt. 6, 1903, p. 350, fig. 74.

2 Deshayes, Desor. Coq. Foss. Env. Paris, vol. ii., 1824, pp. 222-7, pl. xxvi., figs. 15-25.

*Occurrence.*—Tertiary; balcombian series. From the blue clays of the deeper part of the Altona Bay Coal-shaft. Collected and presented by Mr. J. S. Green.

## Fam. CYPRAEIDAE.

Genus *Cypraea*, Linnaeus.*Cypraea gabrieli*, sp. nov. (Plate XIII.)

*Description.*—Shell very large. Seen from above, sub-oval; anterior wide and blunt, posterior acuminate. Seen from the side, back very gibbous, with a steep face on the apical end, and sloping more gradually to the posterior. Spire partly concealed, situated in a depression. Base flattened, oval; inner lip rounded (somewhat crushed in specimen), smooth within, flattened towards the anterior canal, and terminating in a projecting flange; outer lip rather narrow, fairly smooth, but showing about 6 transverse undulations in the median and posterior area, representing the bases of undeveloped or obtuse teeth. Surface covered with a thin brown enamel which is conspicuously contused all over the shell, appearing as a polygonal system of depressions, fairly regular in size and averaging about 5 mm. across. The underlying shell also bears contused markings, but not so prominently.

*Dimensions.*—Length, 136.5 mm.; width, 101.5 mm.; height (base to vertex), 75 mm.; greatest diameter of depressed apical area, 23 mm.; width of middle of mouth, 9.25 mm.; width near posterior end, 11.25 mm.

*Observations.*—This large and handsome cowry is nearest to *Cypraea contusa*, McCoy,<sup>1</sup> both in general form and in the contused ornament. It is, however, of much larger dimensions, being more than four times as long, and differs in having a broad, flattened anterior with sunken spire, and a flatter base or oral surface.

Amongst the giant cowries it is shaped more like *C. dorsata*, Tate,<sup>2</sup> than *C. gigas*, McCoy,<sup>3</sup> being shorter and more tumid than the latter. It is very distinct, however, even from *C. dorsata* in the steepness of the apical face, in which the spire is deeply immersed.

*Occurrence.*—Janjukian series; Bird Rock Cliffs, Torquay, Vict. Collected and presented by Mr. C. J. Gabriel, after whom the species is named.<sup>4</sup>

1. Prod. Pal. Vict., dec. v, 1877, p. 38, pl. xlix., figs. 3, 4.

2. Trans. Roy. Soc. S. Austr., vol. xiii., 1890, pt. ii., p. 212; pl. x., fig. 4; pl. xi., fig. 6.

3. Prod. Pal. Vict., dec. ii, 1875, p. 19, pl. xv.; pl. xvi., fig. 2; pls. xvii. and xviii., fig. 1  
Ibid., dec. iii, 1876, p. 35, pls. xxviii. and xxix., fig. 1.

4. Mr. Gabriel is to be congratulated on the complete success of his endeavour to secure this large specimen, as he was armed only with a pocket-knife. The shell was very badly impregnated with salt from the sea-spray, but by slowly drying and sizing the specimen it has been saved from the rapid disintegration that was going on when obtained.



